MtBE Remediation Bureau
Drinking Water Quality Program

Source Water Protection Workshop

May 6, 2015

Presentation Overview

- MtBE Remediation Bureau
- Status update on Bureau progress
- Drinking Water Quality Program
  - Prioritizing sites
  - Process for developing sites
  - Results to date
- Going beyond MtBE

Background

- Gasoline additive used in NH from 1979 through 2006
- Highly soluble & degrades very slowly
- Widespread contamination
- Carcinogenic in animals
- Litigation initiated 2003 & settled 2013
- Settlement money set aside into dedicated MtBE remediation fund

Bureau Mission

- Bureau created to Address MtBE Contamination
- DOJ has sole discretion over funds, but administratively delegated to DES
  - Remediation
  - Prevention
  - Sampling
  - Infrastructure

Prevention/Remediation

- Env-Or 408.05: Single wall tank systems shall be permanently closed by December 22, 2015
- We can assist if removal of the tank is related to MtBE cleanup or investigation activities
- 16 tanks pulled
- 84 scheduled

Infrastructure

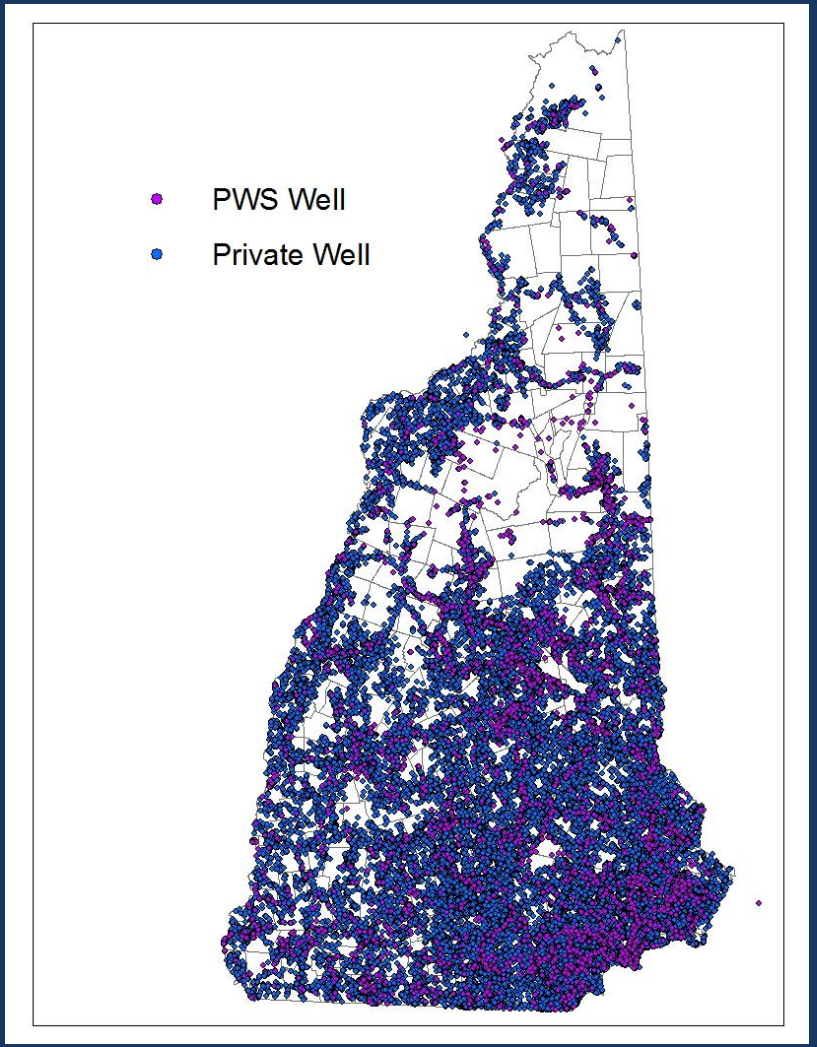
- Five projects underway
  - 1400 feet of in Rochester
  - One mile in Windham
  - 1000 feet in Atkinson
  - Feasibility study in Plaistow to convert FSS and develop sources
  - Replacement of Dover Griffin Well
- Several others in development

Drinking Water Quality Team

- Deb Loiselle
- Eric Abrams
- Kala Gonsler
- Tina Clark
- Greg Cummings
- Katie Zink
- Tanya Dyson
- Stephanie Nistico

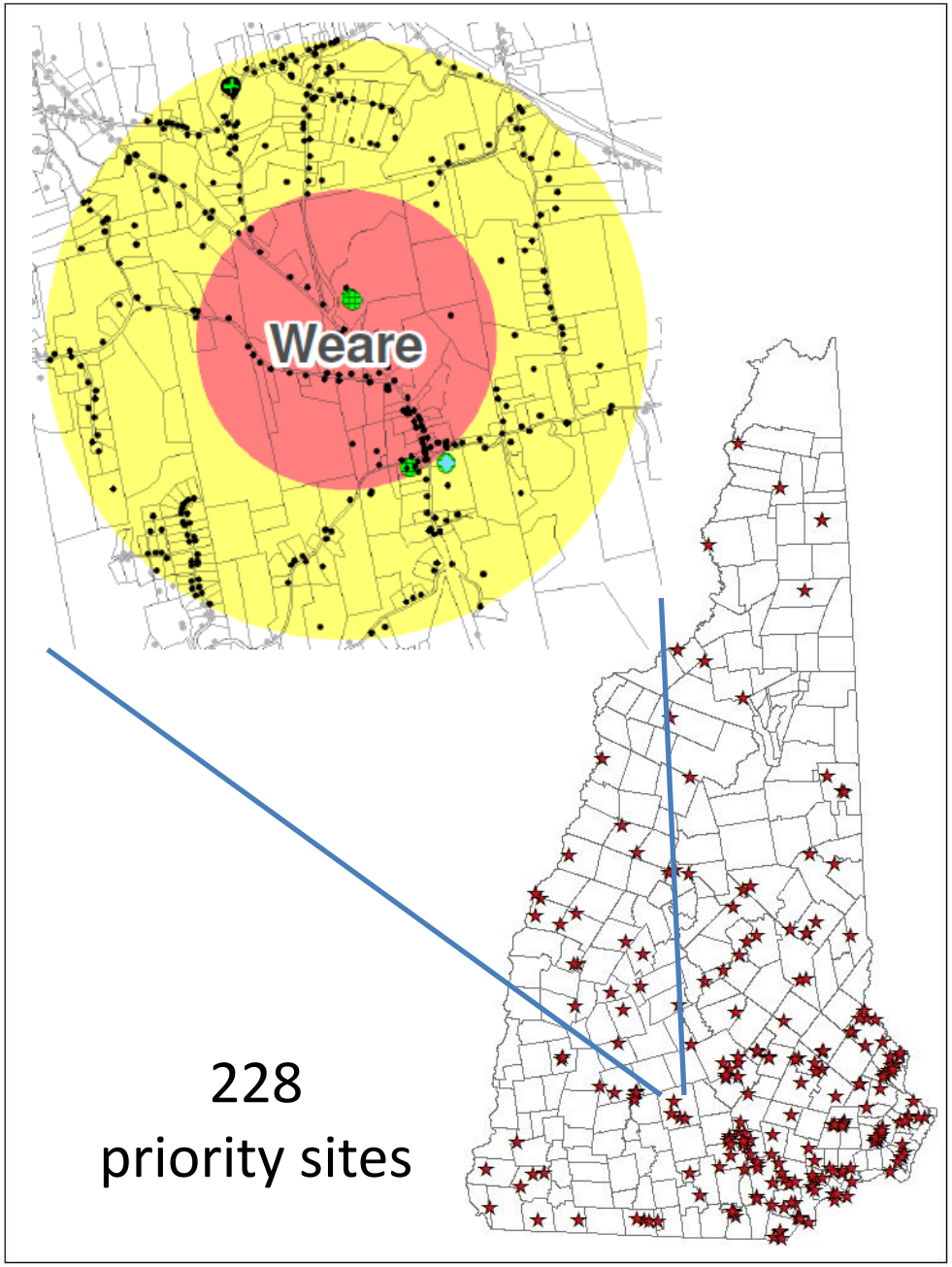
Sampling - Where Do We Begin?

- 1.3 million people in NH
- 36% of residents served by private well
- 250,000 wells serving 500,000 people
- Approximately 4,000 new wells drilled each year



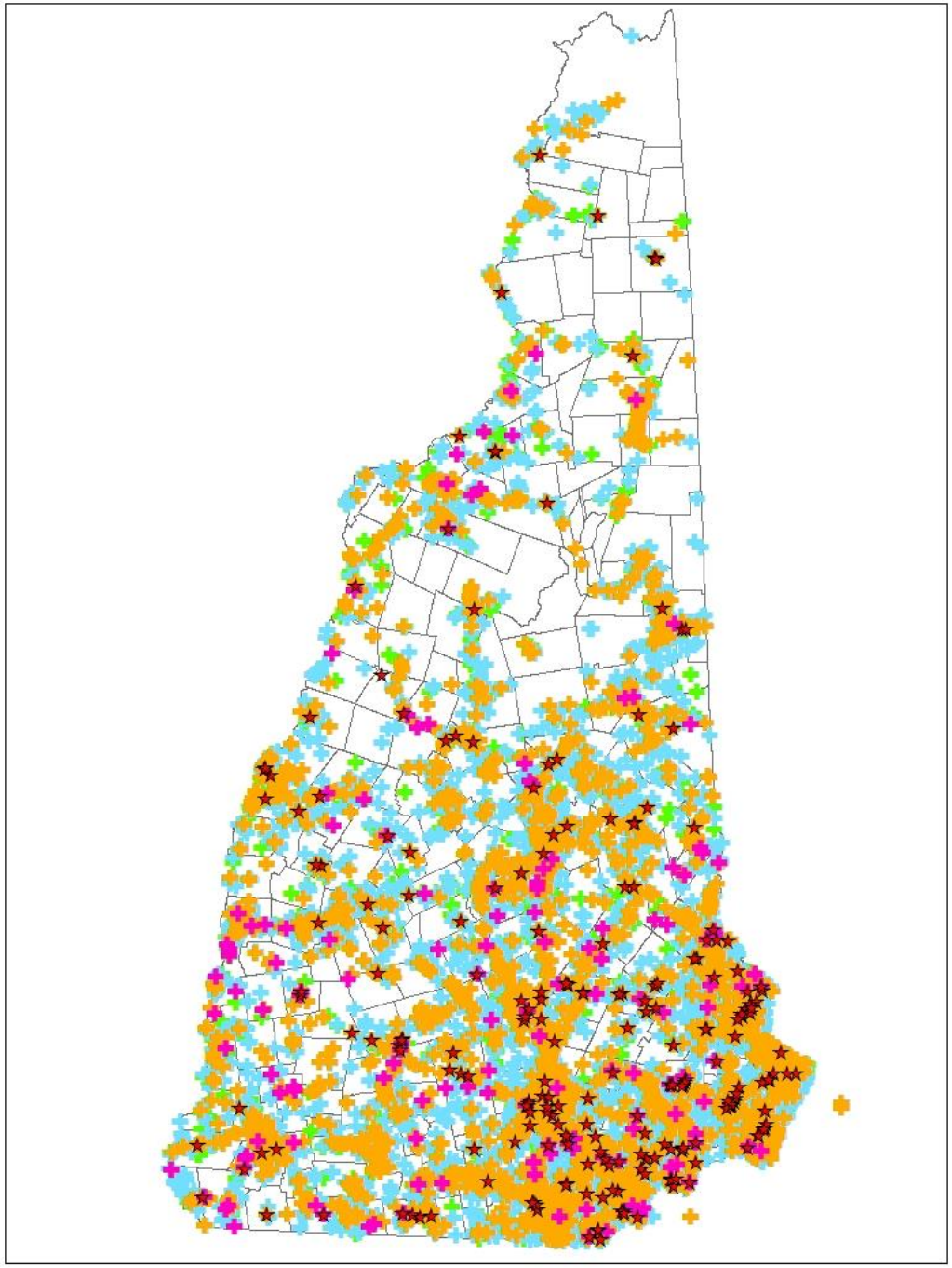
Well Density

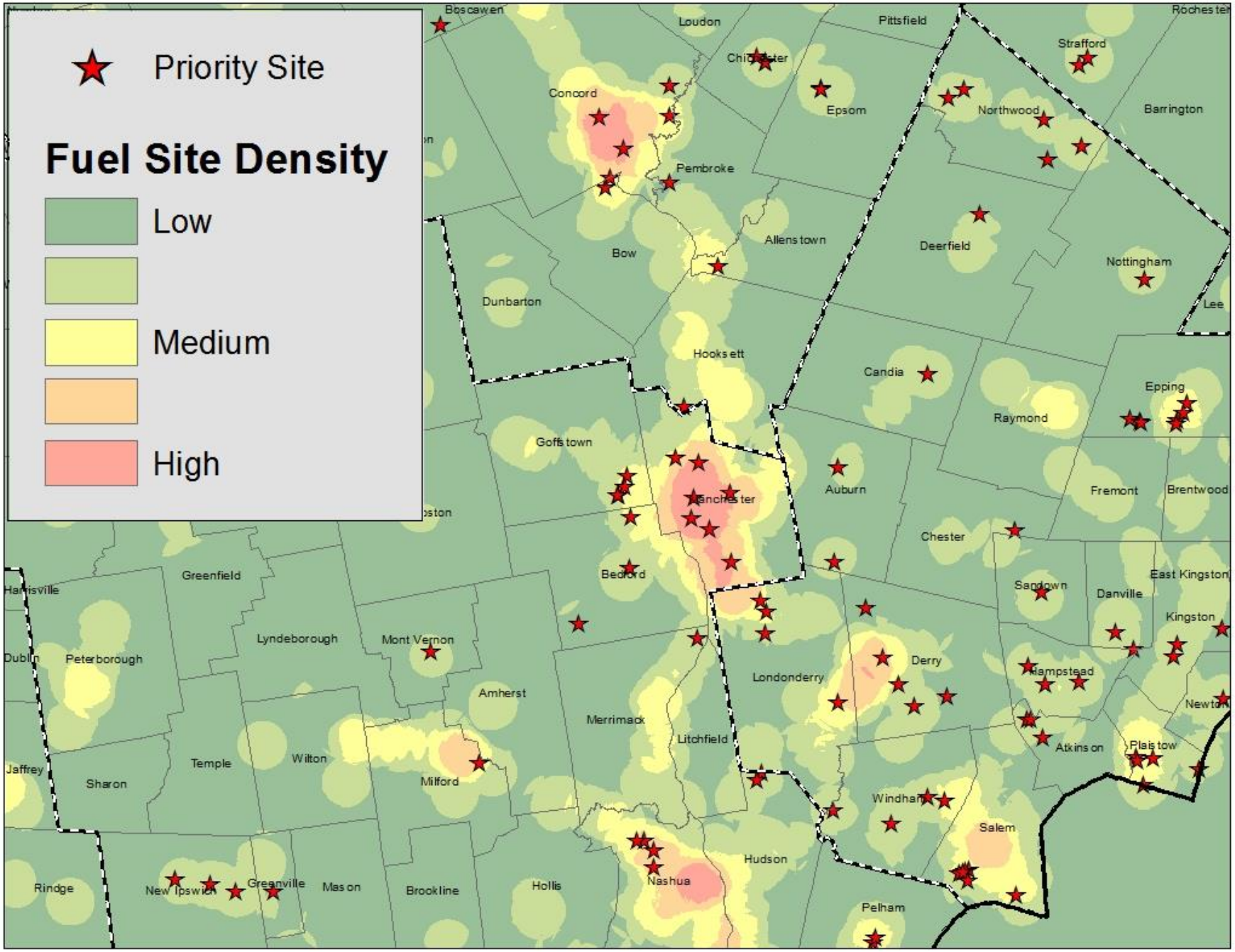
SITE_ID	TOWN	WELLS
198903017	PLAISTOW	890
199003008	PLAISTOW	876
198703001	BEDFORD	662
199603008	SALEM	637
199804060	HAMPSTEAD	622
199609008	SALEM	600
199606026	SALEM	584
199008001	WINDHAM	564
198904007	EPPING	498
200610084	ATKINSON	465
200412055	EPPING	428
200502026	EPPING	349
199102011	BOW	339
198404069	PLAISTOW	337
199204023	EPPING	323
199812237	HAMPTON	309
199809011	ALTON	290

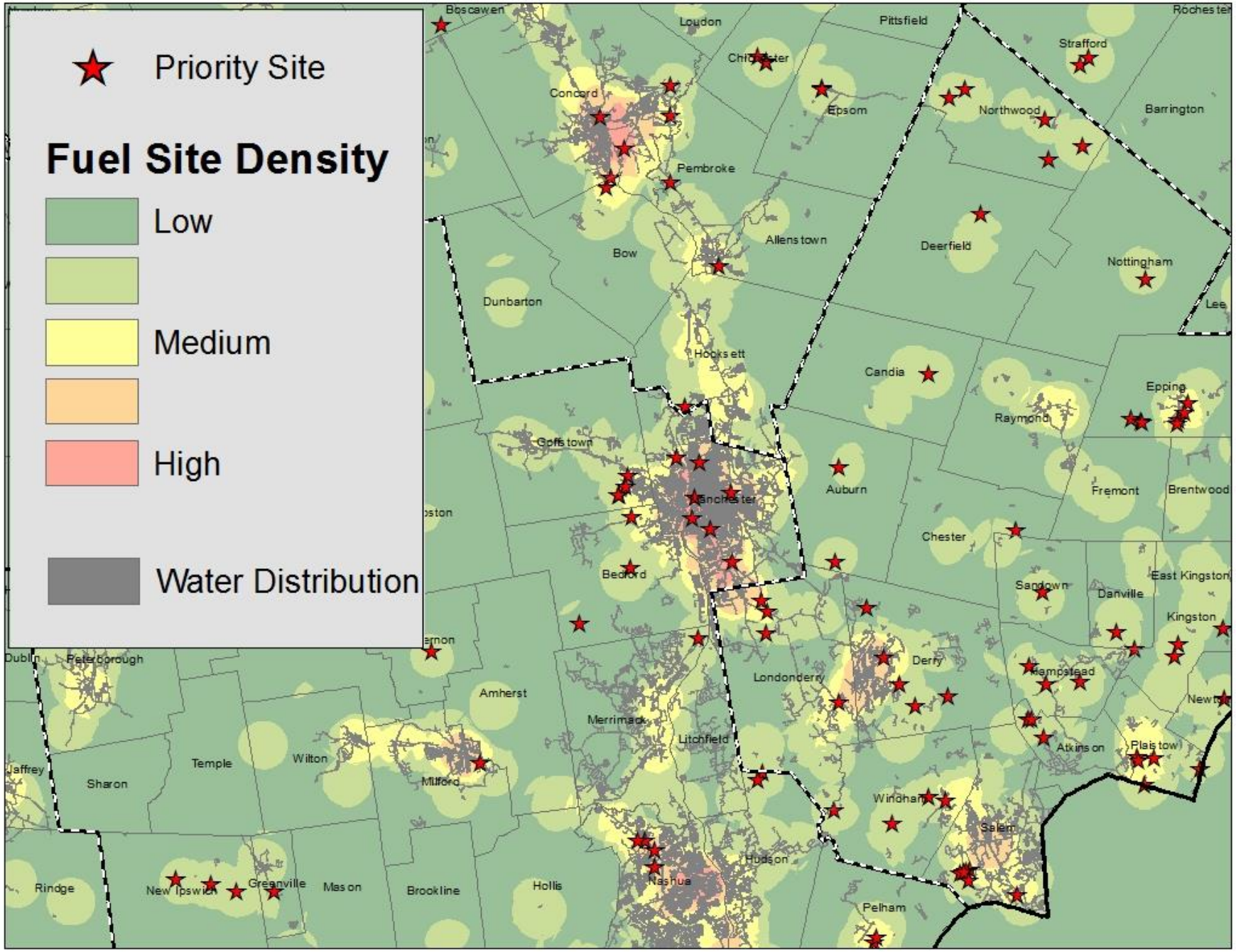


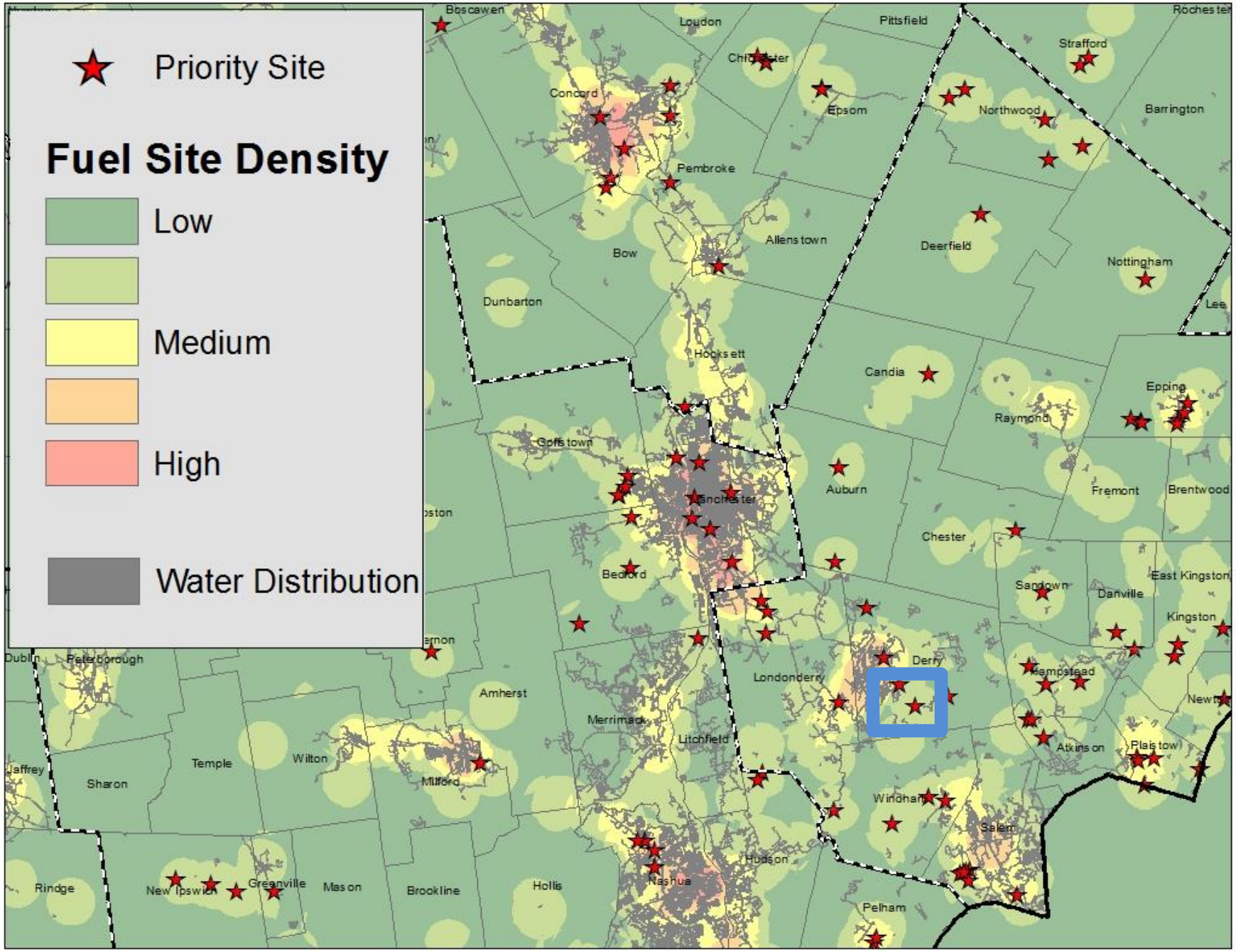
Contaminated Sites

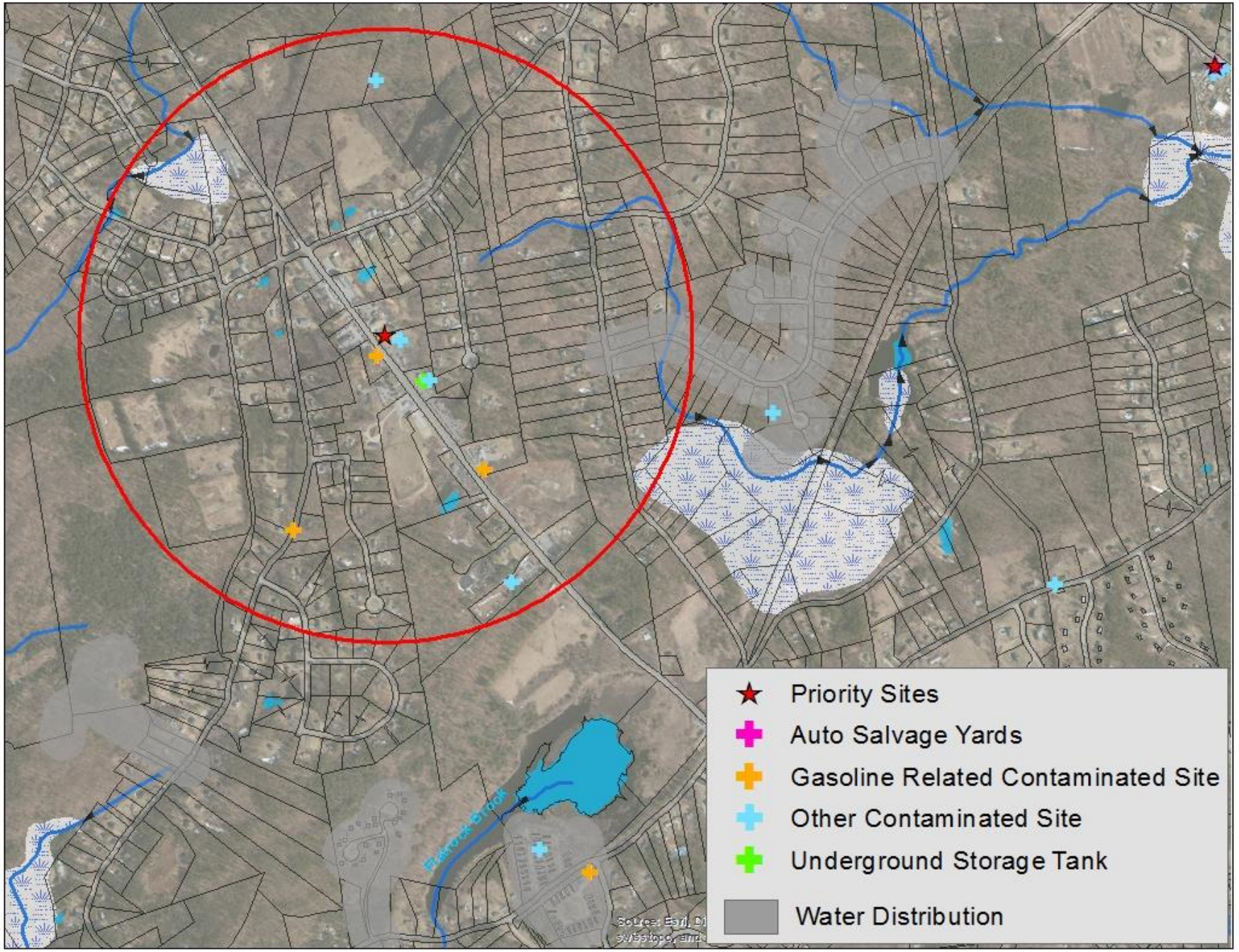
- Priority Sites
- Auto Salvage
- Gasoline Related
- Other Site
- UST




Priority Site
Fuel Site Density
Low
Medium
High
Boscawen
Loudon
Pittsfield
Rochester
Strafford
Concord
Epsom
Northwood
Barrington
Pembroke
Allenstown
Deerfield
Nottingham
Bow
Dunbarton
Lee
Hooksett
Candia
Epping
Raymond
Goffstown
Auburn
Fremont
Brentwood
Chester
Bedford
East Kingston
Sandown
Danville
Kingston
Greenfield
Harrisville
Lyndeborough
Mont Vernon
Dublin
Peterborough
Derry
Londonderry
Hampstead
Amherst
Merrimack
Litchfield
Newton
Atkinson
Plaistow
Jaffrey
Temple
Wilton
Sharon
Milford
Windham
Salem
Hudson
Rindge
New Ipswich
Greenville
Mason
Brookline
Hollis
Nashua
Pelham


Priority Site
Fuel Site Density
Low
Medium
High
Water Distribution
Boscawen
Loudon
Pittsfield
Rochester
Strafford
Chichester
Concord
Epsom
Northwood
Barrington
Pembroke
Allenstown
Bow
Deerfield
Nottingham
Dunbarton
Lee
Hooksett
Candia
Epping
Raymond
Goffstown
Auburn
Fremont
Brentwood
Chester
East Kingston
Bedford
Sandown
Danville
Kingston
Peterborough
Derry
Londonderry
Hampstead
Amherst
Merrimack
Litchfield
Atkinson
Plaistow
Temple
Wilton
Milford
Windham
Salem
Sharon
Hudson
Nashua
Greenville
Mason
Brookline
Hollis
New Ipswich
Pelham


Priority Site
Fuel Site Density
Low
Medium
High
Water Distribution
Boscawen
Loudon
Pittsfield
Rochester
Strafford
Concord
Epsom
Northwood
Barrington
Pembroke
Allenstown
Bow
Deerfield
Nottingham
Dunbarton
Lee
Hooksett
Candia
Epping
Raymond
Goffstown
Auburn
Fremont
Brentwood
Chester
East Kingston
Bedford
Sandown
Danville
Kingston
Derry
Londonderry
Hampstead
Amherst
Merrimack
Litchfield
Atkinson
Plaistow
Newton
Dublin
Peterborough
Jaffrey
Sharon
Temple
Wilton
Milford
Windham
Salem
Hudson
Nashua
Ringe
New Ipswich
Greenville
Mason
Brookline
Hollis
Pelham


Priority Sites
Auto Salvage Yards
Gasoline Related Contaminated Site
Other Contaminated Site
Underground Storage Tank
Water Distribution

Data Mining

TABLE 10
SUMMARY OF RESIDENTIAL BEDROCK WELL MONITORING RESULTS
DERRY, NEW HAMPSHIRE

PARAMETER	Aug-01	Apr-03	Jul-03	Jul-04	Jul-05	Jul-06	Jul-07	Jul-07	Nov-07	Apr-08	Nov-08	Apr-09	Nov-09	Apr-10	Nov-10	Apr-11	Aug-11	Nov-11	May-12	AGQS
Trichloroethene	1.0	0.6	0.7	BD	BD	BD	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	5
Acetone	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD/13	13	BD/12	6,000
Xylenes	BD	BD	BD	BD	BD	BD	1.4	1.8	0.5	BD/0.5	BD/0.5	3.1	BD/1.0	BD/1.0	BD/1.0	BD/1.0	BD/1.0	BD/1.0	BD/1.0	10,000
Ethylbenzene	BD	BD	BD	BD	BD	BD	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	0.6	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	700
Toluene	BD	BD	BD	BD	BD	BD	0.8	1.0	1.4	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	1,000
Styrene	BD	BD	BD	BD	BD	BD	BD/0.5	2.2	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	100
MTBE	2.9	1.8	2.5	2.9	2.3	9.4	36.5	40.1	10.7	36.8	51.8	18.1	20	19	10	24	23	16	15	13
Tertbutyl Alcohol	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	12	BD/5.0	BD/5.0	BD/5.0	BD/5.0	40

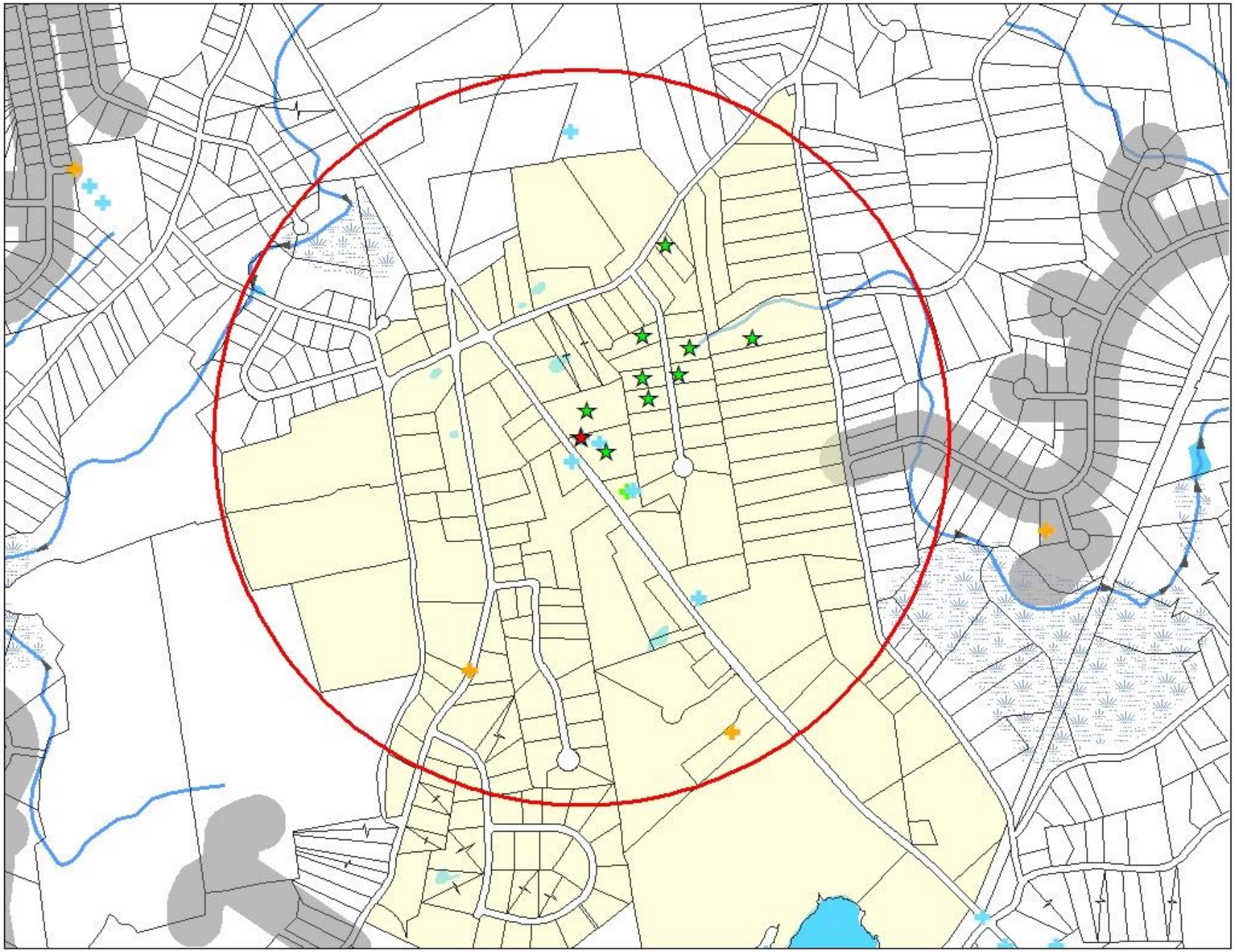
TABLE 11
SUMMARY OF RESIDENTIAL BEDROCK WELL MONITORING RESULTS
DERRY, NEW HAMPSHIRE

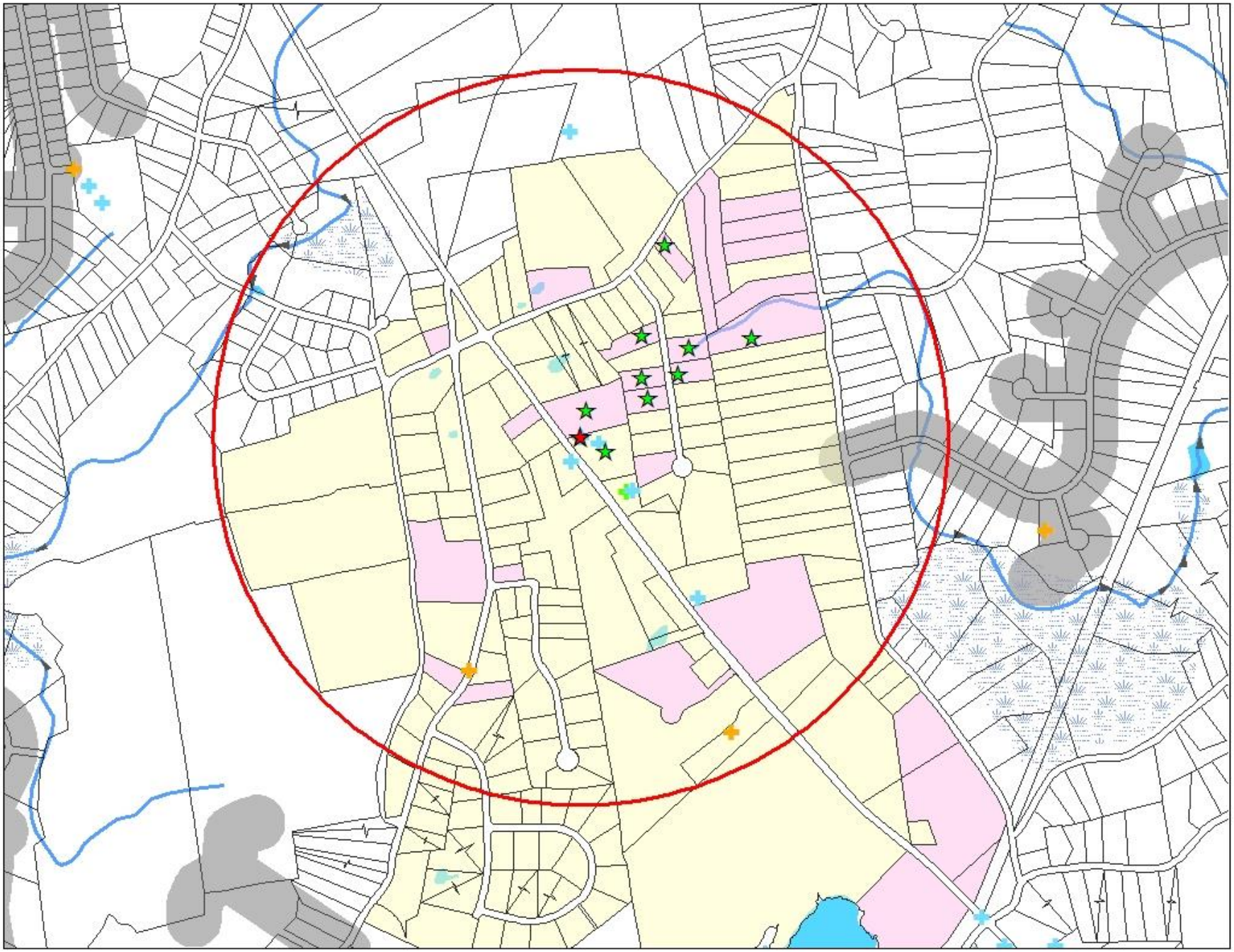
PARAMETER	Aug-01	Apr-03	Jul-03	Jul-04	Jul-05	Jul-06	Jul-07	Apr-08	Apr-09	Nov-09	Apr-10	Apr-11	May-12	AGQS
Trichloroethene	BD	0.5	BD	BD	BD	BD	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	5
Chloroform	BD	BD	BD	0.5	BD	BD	BD/0.5	BD/0.5	BD/0.5	1.3	BD/0.5	BD/0.5	BD/0.5	NStd.
Trichloroethene	BD	BD	BD	BD	BD	BD	BD/0.5	BD/0.5	1.3	BD/0.5	BD/0.5	BD/0.5	BD/0.5	5
MTBE	1.9	0.9	1.6	2.0	0.8	0.5	3.8	BD/0.5	3.8	BD/0.5	BD/0.5	BD/0.5	BD/0.5	13

TABLE 12
SUMMARY OF RESIDENTIAL BEDROCK WELL MONITORING RESULTS
DERRY, NEW HAMPSHIRE

PARAMETER	May-04	Nov-04	Apr-05	Jul-05	Nov-05	Apr-06	Jul-06	Dec-06	Apr-07	Jul-07	Nov-07	Apr-08	Apr-09	Nov-09	Apr-10	Apr-11	Nov-11	May-12	Jul-12	AGQS
cis-1,2 Dichloroethene	1.1	1	BD	BD	0.5	BD	BD	BD/0.5	0.6	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	70
Tetrachloroethene	5.6	4.2	1.7	0.7	1.7	0.6	0.8	0.8	0.6	0.6	0.6	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	BD/0.5	5
Trichloroethene	2.3	2.3	1.2	BD	1.3	0.6	1.1	1.6	2.0	2.0	2.1	1.6	1.3	1.0	1.3	1.6	BD/0.5	1.0	BD/0.5	5
MTBE	8.8	9.5	4.8	1.0	4.7	1.8	3.6	3.8	7.5	6.1	4.0	3.2	4.0	4.6	12	15	2.5	12	7.2	13

PARAMETER	Feb-01	Mar-01	Jul-01	Mar-02	Apr-03
Benzene	BD	BD	BD	BD	BD
Dichlorodifluoromethane	5	BD	6	BD	BD
Tetrachloroethene (PCE)	32	27	12	77	13
Trichloroethene (TCE)	BD	BD	BD	4	BD
Toluene	BD	BD	BD	BD	BD
MTBE	BD	BD	41	BD	21
Xylenes	BD	BD	BD	BD	BD
1,2,4 Trimethylbenzene	BD	BD	BD	BD	BD
Ethylbenzene	BD	BD	BD	BD	BD
Tertbutyl Alcohol	BD	BD	BD	BD	65





Conduct Outreach

- Meet with town officials
- Notify state legislators
- Notify project managers

Invitations

- Dispel fear
- Free VOC analysis
- Offer solutions
- Offer to collect other samples

Protect Your Family's Health

Test Your Water Today for All Common Pollutants

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

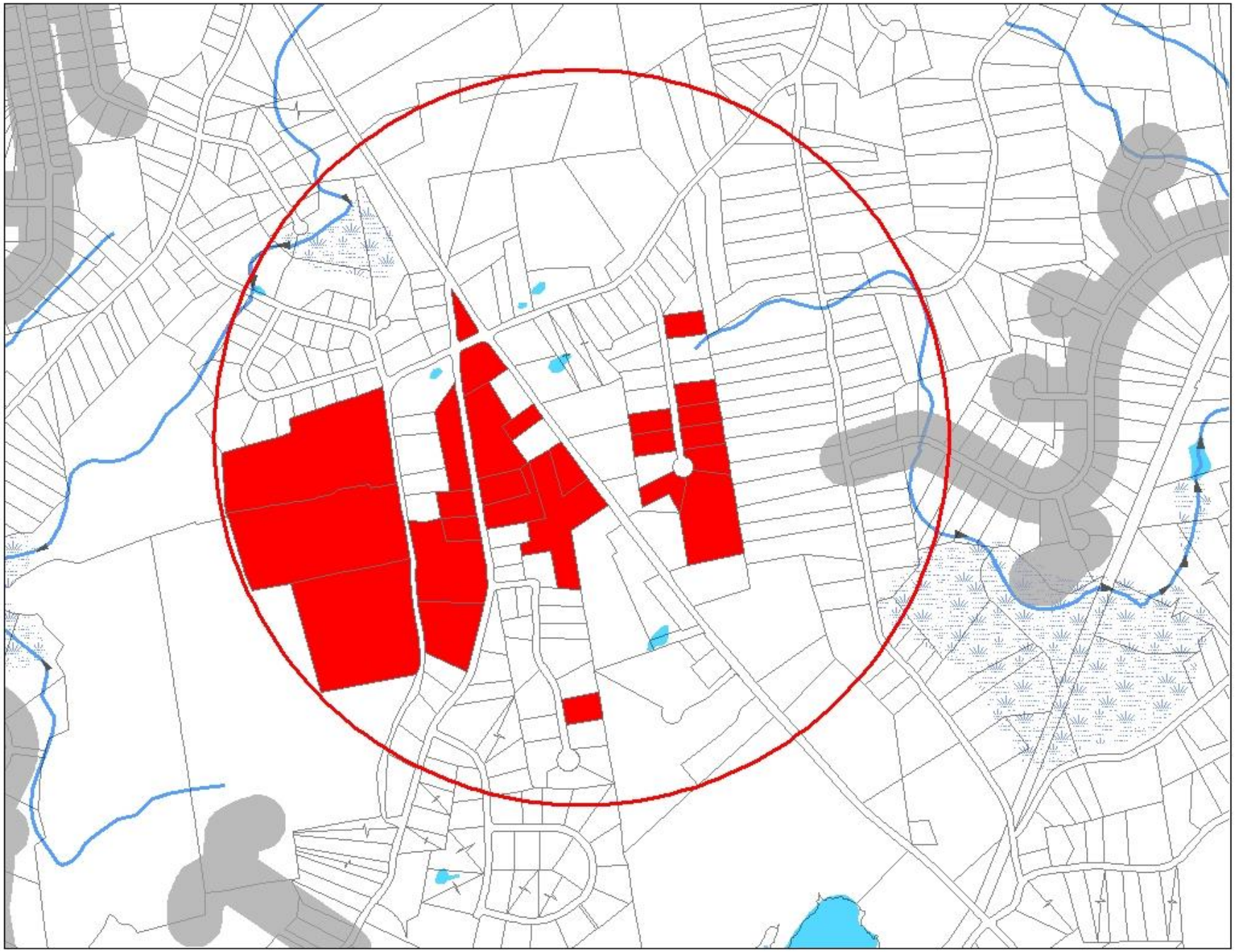
Why should I test my well water?

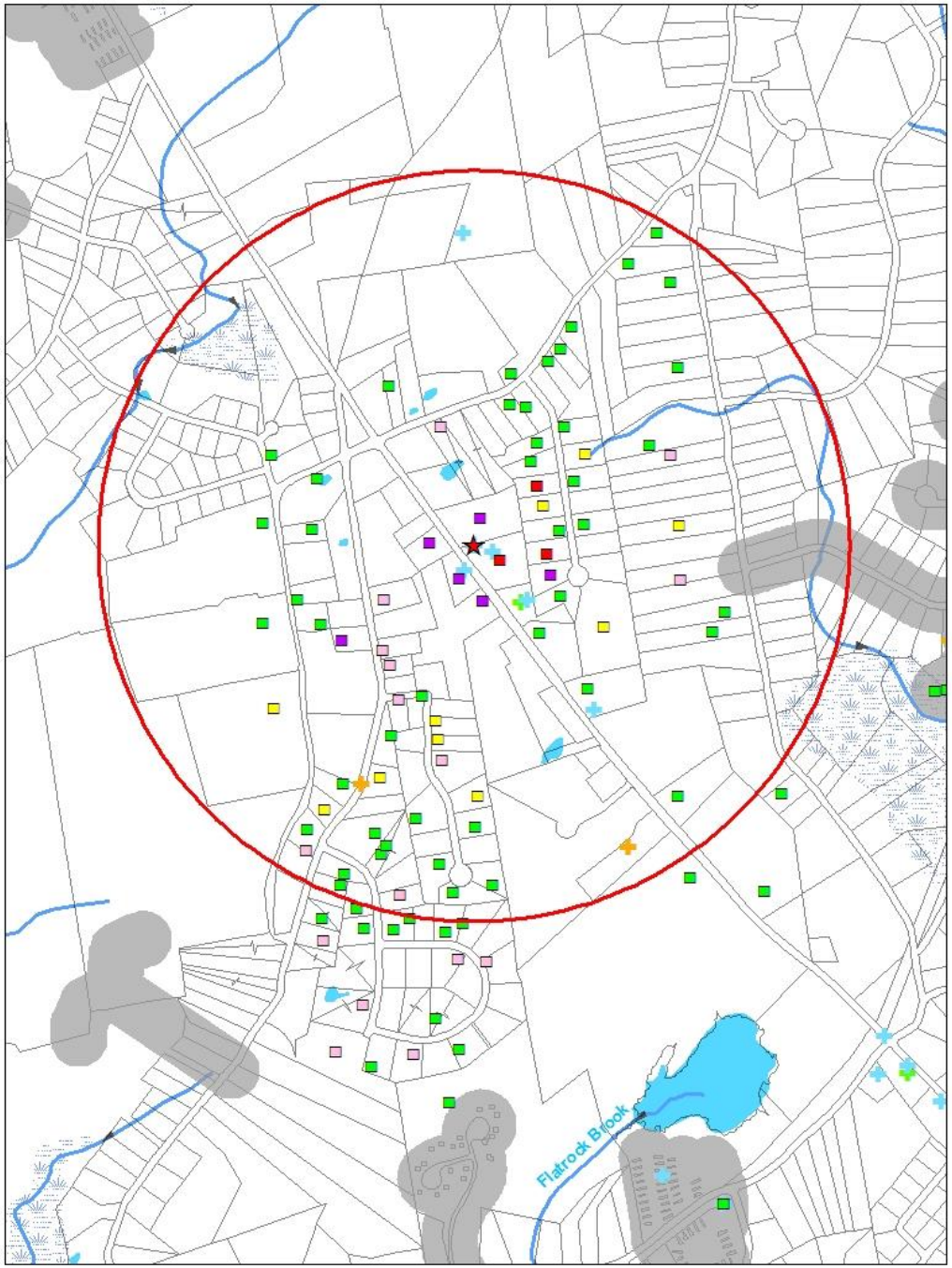
Unhealthy levels of various contaminants are common in private wells in New Hampshire. Some of these contaminants have been linked to cancer and other diseases. Most of these contaminants have no taste, smell or color. You won't know what's in your well water unless you have it tested by a laboratory. State and local laws generally do not require testing of private well water. If you have a private well, the New Hampshire Department of Environmental Services (NHDES) strongly recommends that you have your well water tested – for all of the most common pollutants – to help protect your family's health. If a test shows that your well water has contaminants in it, NHDES can help you consider water treatment choices that work best for the level of contaminants in your water.

How do pollutants get into well water?

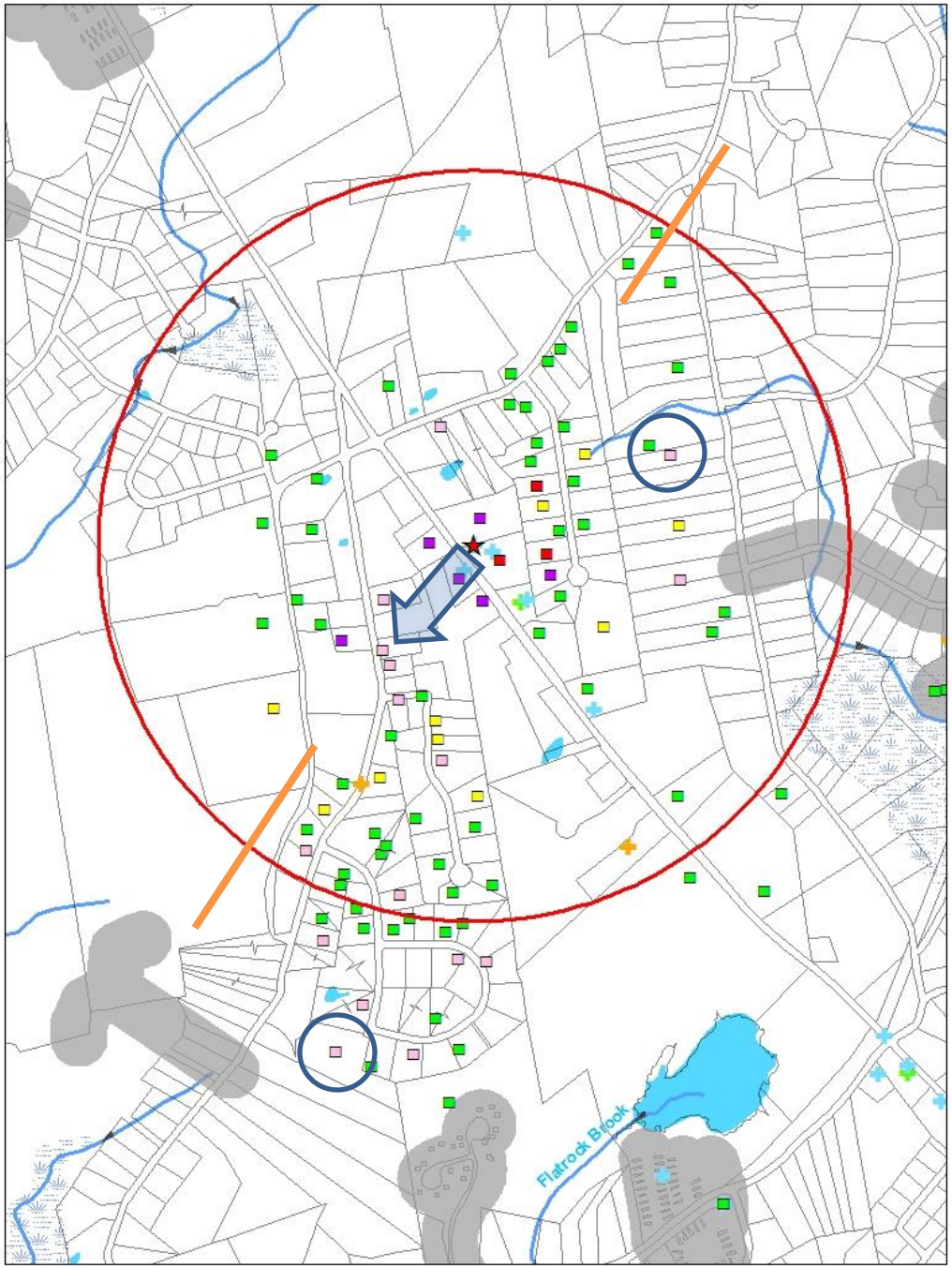
Sampling

Wellhead / Sanitary Inspection





- >13 ppb
- 5 – 12.99 ppb
- 0.5 – 4.99 ppb
- J Flag estimates
- Below detection



- >13 ppb
- 5 – 12.99 ppb
- 0.5 – 4.99 ppb
- J Flag estimates
- Below detection

Participation

TOWN	INVITED	PARTICIPATING	RATE
Atkinson	154	78	**50.6%**
Belmont	49	26	**53.1%**
Danville	151	70	**46.4%**
Derry	153	83	**54.2%**
Epping	28	12	**42.9%**
Hampton Falls	38	17	**44.7%**
Kingston	246	94	**38.2%**
Londonderry	93	63	**67.7%**
Pelham	86	33	**38.4%**
Salem	92	47	**51.1%**
Salisbury	71	42	**59.2%**
Sandown	112	1	**0.9%**
Stratham	179	88	**49.2%**
Windham	268	132	**49.3%**
TOTAL	**1720**	**786**	**45.7%**

Sample Results

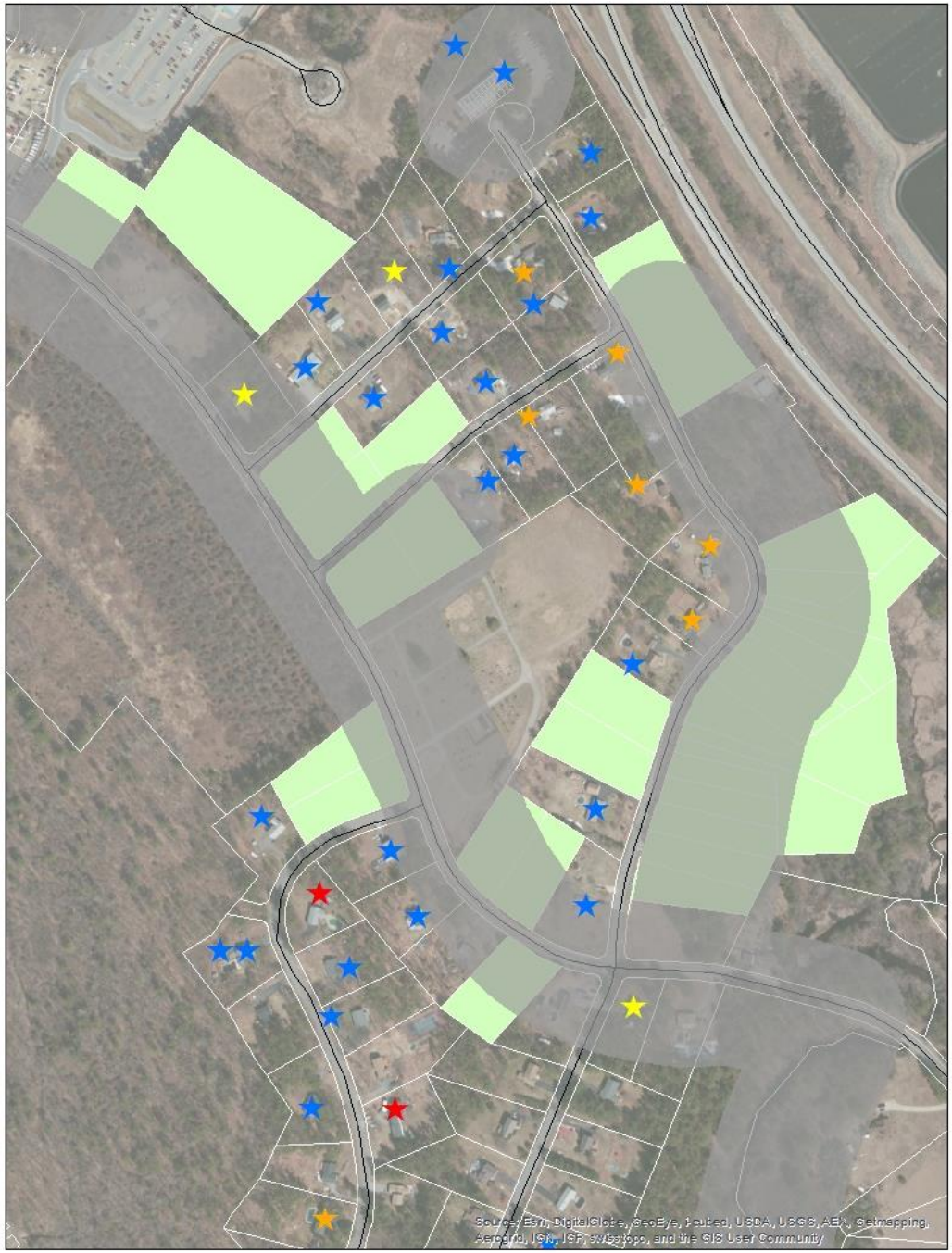
TOWN	BD	JFLAG	.5 - 4.99	5 - 12.99	>13	RATE
Atkinson	49	6	5			**18.3%**
Belmont	21	2		1		**12.5%**
Danville	26	14	9			**46.9%**
Derry	50	17	4	1	4	**34.2%**
Epping	5					**0.0%**
Hampton Falls	13		3			**18.8%**
Kingston	54	6	9			**21.7%**
Londonderry	54	7	2			**14.3%**
Pelham	24	8	1			**27.3%**
Plaistow					1	**100.0%**
Salem	31	4				**11.4%**
Salisbury	35	3	3	1		**16.7%**
Stratham	62	10	4			**18.4%**
Windham	67	18	13			**31.6%**
TOTAL	**491**	**95**	**53**	**3**	**5**	**24.1%**

Water Quality Beyond MtBE

LAB	VOC	STAND	RADS	1,4-D	TOTAL
LAB 1	$49.00	$75.00	$75.00	$75.00	$274.00
LAB 2	$54.00	$145.00	$90.00	$75.00	$364.00
LAB 3	$64.00	$325.00	$170.00	$60.00	$619.00
LAB 4	$65.00	$184.00	$120.00	$80.00	$449.00
LAB 5	$68.50	$125.00	$95.00	$50.00	$338.50
LAB 6	$74.99	$135.00	$100.00	$70.00	$379.99
LAB 7	$75.00	$150.00	$120.00	$120.00	$465.00
LAB 8	$80.00	$155.00	$105.00	$110.00	$450.00
LAB 9	$85.00	$175.00	$225.00	$175.00	$660.00

Water Quality Beyond MtBE

PARAMETER	COUNT	MAX RESULT	LIMIT
ARSENIC	24	0.1987	0.01
RADON	64	219411	2000
URANIUM	8	330	30
SODIUM	5	668	250
CHLORIDE	16	1100	250
LEAD	44	15.1	0.015
COPPER	16	27.7	1.3
IRON	20	2.95	0.3
MANGANESE	35	1.03	0.05
NITRATE	4	31	10
TOTAL COLIFORM	24		
E.COLI	1		



Other VOCs

- MtBE
- CVOCs / 1,4-D
- All of the above
- VOCs BRL
- Connected to PWS

MtBE Key Points

- MtBE is detected by the program in a drinking water well almost every day
- MtBE is detected above the notification limit by the program almost every month
- Concentrations are generally low and widely dispersed suggesting low attenuation in bedrock
- Plumes inadequately characterized as flow direction largely reviewed only in overburden

Future Consideration

- Investigation into areas where public water supplies have had recent detections
- Receptors with sensitive populations
- Lab reimbursement program
- Targeted sampling near isolated detections
- Need to ID funding mechanism to pay for other analyses…Ideas?

Contacts

- Gary Lynn – Administrator

  603-271-8873
- Josh Whipple – Remediation/Prevention

  603-271-7377
- Tal Hubbard – Infrastructure

  603-271-2014
- Derek Bennett – Water Quality Sampling

  603-271-8520